

REMARKS

Reconsideration of the above-identified patent application in view of the amendments above and the remarks following is respectfully requested.

Claims 1-72 are in this case. Claims 25, 34-37, 46-49, 58-61 and 70-72 have been rejected under § 102(e). Claims 26-29, 31, 38-41, 43, 50-53, 55, 62-65 and 67 have been rejected under § 103(a). Claims 8, 20, 32, 33, 44, 45, 56, 57, 68 and 69 have been objected to. Claims 1-7, 9-19 and 21-24 have been allowed. Independent claims 25, 37, 49 and 61 and dependent claims 6, 18, 30, 42, 54 and 66 have been amended. New claims 73-88 have been added.

The claims before the Examiner are directed toward methods and systems for resolving pointing ambiguities that arise when a user of a computer interface such as a GUI intends to point a pointer towards a targeted one of a plurality of objects. The user moves the pointer toward the targeted object. Because of the pointing ambiguities, the pointer also points towards at least one other object. The computer resolves the ambiguity implicitly by analyzing the user movements and predicting, using heuristic measures, which of the objects pointed to is the targeted object.

§ 102(b) Rejections – Tahara et al. ‘842

The Examiner has rejected claims 25, 34-37, 46-49, 58-61 and 70-72 under § 102(e) as being anticipated by Tahara et al., US Patent No. 6,362,842 (henceforth, “Tahara et al. ‘842”). The Examiner’s rejection is respectfully traversed.

Tahara et al. ‘842 teach two enhancements of a GUI. Under the first enhancement, the operation represented by an icon is displayed on the screen as the user moves the cursor (a “pointer”) towards the icon, not just when the cursor reaches the icon. Under the second enhancement, the way an icon or window is displayed, or the way the cursor is displayed, is changed in response to movement of the cursor

towards the icon or window. For example, when a user moves the cursor towards a window boundary for the purpose of moving or resizing the window, the cursor changes from a single-headed arrow to a double-headed arrow, even before the cursor reaches the window boundary. The work of inferring which icon or window is to be addressed is performed by target determination part 24.

The crucial difference between the present invention and the teachings of Tahara et al. '842 is that Tahara et al. '842 have no pointing ambiguities to resolve. The present invention is directed towards resolving pointing ambiguities such as those listed on page 11 lines 2-5 of the specification:

...overlapping of objects, inaccurate pointing due to demanding and/or dynamic conditions such as small targets, moving targets, and a sub-optimal working environment, and, limited pointing devices such as mobile pointing devices, gesture recognition interfaces, and eye-movement interfaces.

None of these conditions exist in the conventional GUI of Tahara et al. '842, as addressed by Tahara et al. '842. In particular, the objects and windows addressed by Tahara et al. '842 do not overlap. All Tahara et al. '842 need to do to determine which icon or window is being addressed by the user is described in column 9 lines 9-15 in the case of their first embodiment:

In step 108 (S108), the target determination part 24 detects a target which is displayed in the range of angle θ opening toward the direction of movement of the pointer in the display screen of the display device 16. When multiple targets satisfying this condition exist, the target determination part 24 detects a target which is nearest the center of the direction of movement of the pointer, for example.

and in column 12 lines 17-30 in the case of the second embodiment:

In step 144 (S144), the target determination part 24 detects the distance $L_i(p)$ between the pointer and each of the icons/windows...displayed on the display screen of the display device 16 and determines whether or not there is any frame T which is within the distance threshold L from the pointer without including the display position of the pointer....When multiple frames T (icon/window) satisfying this condition exist, the target determination part 24 selects

the frame T which is the shortest in distance from the pointer, for example.

In particular, there is no need to determine implicitly where the user is pointing, as recited in independent claims 25, 37 49 and 61. All such determinations are done explicitly, for example by determining which icon or frame is closest to the pointer or closest to the axis of movement of the pointer.

Thus, the present invention, as recited in independent claims 25, 37, 49 and 61, is not anticipated by Tahara et al. '842. Furthermore, the present invention, as recited in independent claims 25, 37, 49 and 61, is not even obvious from Tahara et al. '842. There is neither a hint nor a suggestion in Tahara et al. '842 of an implicit determination, using heuristic measures, of which of a set of ambiguous objects a user intends to point to. The only ambiguity condition, from among those listed on page 11 lines 2-5 of the specification, that could exist in the conventional GUI of Tahara et al. '842 is that of overlapping objects. Tahara et al. '842 do not address this condition. The explicit methods of Tahara et al. '842 would be incapable of resolving this kind of ambiguity; and there is neither a hint nor a suggestion in Tahara et al. '842 of the implicit methods, such as the implicit methods of the present invention, that would be needed to resolve this kind of ambiguity.

To further distinguish the present invention from the teachings of Tahara et al. '842, new dependent claims 73-80 have been added. New dependent claims 73-76 require independent claims 25, 37, 49 and 61, respectively, to address the "overlapping object" ambiguity. New dependent claims 77-80 require independent claims 25, 37, 49 and 61 to address an important special case of the "overlapping object" ambiguity: the composite object ambiguity. The composite object ambiguity is defined in the specification on page 8 line 1 through page 10 line 23, and is the ambiguity addressed in detail in the specification, for example in the EXAMPLE

section from page 61 line 21 through page 66 line 16 with reference to Figures 13-16.

Support for new claims 73-80 is found in the specification, *inter alia*, in that EXAMPLE section. As noted on page 12 lines 22-23,

The present invention is widely applicable and extendable to resolving a variety of different types of pointing ambiguities such as composite object types of pointing ambiguities... (emphasis added)

To facilitate the recitation of these limitations, independent claims 25, 37, 49 and 61 have been amended. Specifically, the pointing ambiguities now are introduced in the body of each claim rather than in the preamble of each claim; and it is stated explicitly that the pointing ambiguities are associated with the target object and at least one other object. Support for the pointing ambiguities being associated with the targeted object and another object is found in the specification in the description of pointing ambiguities in the “Field and Background” section, for example, on page 8 lines 7-8 with reference to Figure 1,

...when a user clicks inside the circle A, the user may want to select either the inner slice B or the entire circle C.

With independent claims 25, 37, 49 and 61 allowable in their present condition, it follows that claims 34-36, 46-48, 58-60 and 70-72, that depend therefrom, also are allowable.

§ 103(a) Rejections – Tahara et al. ‘842 and Schmidt et al.

The Examiner has rejected claims 26-29, 31, 38-41, 43, 50-53, 55, 62-65 and 67 under § 103(a) as being unpatentable over Tahara et al. ‘842 and Schmidt et al., “Motor-Output Variability: A Theory for the Accuracy of Rapid Motor Acts”, *Psychological Review* vol. 86 no. 5 pp 415-450 (September 1979). The Examiner’s rejection is respectfully traversed.

It is demonstrated above that independent claims 25, 37, 49 and 61 are allowable in their present form. It follows that claims 26-29, 31, 38-41, 43, 50-53, 55, 62-65 and 67, that depend therefrom, also are allowable.

Other Amendments to the Claims

Inadvertent typographical errors in claims 6, 18, 30, 42, 54 and 66 have been corrected.

Objections

The Examiner has objected to claims 8, 20, 32, 44, 56 and 68 for including the undefined term “ABS”. The Examiner’s objection is respectfully traversed.

It is not necessary to define “ABS” because “ABS” is a well-known term of art. Attached please find a copy of a Web page from the on-line MATLAB manual, with a copyright date of 1994 showing that “ABS” was then understood to mean “absolute value”.

The Examiner has objected to claims 32, 33, 44, 45, 56, 57, 68 and 69 as being based on rejected base claims. The Examiner has noted that claims 32, 33, 44, 45, 56, 57, 68 and 69 would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claim.

New claim 81 is claim 32 rewritten in independent form.

New claim 82 is claim 33 rewritten in independent form.

New claim 83 is claim 44 rewritten in independent form.

New claim 84 is claim 35 rewritten in independent form.

New claim 85 is claim 56 rewritten in independent form.

New claim 86 is claim 57 rewritten in independent form.

New claim 87 is claim 68 rewritten in independent form.

New claim 88 is claim 69 rewritten in independent form.

In view of the above amendments and remarks it is respectfully submitted that independent claims 1, 13, 25, 37, 49, 61 and 81-88, and hence dependent claims 2-12, 14-24, 26-36, 38-48, 50-60 and 61-80 are in condition for allowance. Prompt notice of allowance is respectfully and earnestly solicited.

Respectfully submitted,


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